eSai Spark

January 2026 Issue

What's the Buzz?

Welcome to eSai's monthly digest! Each month we'll bring you regional utility developments and highlights from our team, so you have all you need to know about the energy space in the Mid-Atlantic!

Goodbye 2025, Hello 2026!

A peek into the US Clean Energy Transition from 2025 to 2026

The shift from 2025 to 2026 in the U.S. building energy-efficiency field isn't a gentle evolution. The forces that shaped 2025 (rising load, grid constraints, electrification pressure, and new federal incentives) are turning into operational realities in 2026. The industry is moving from "planning the transition" to executing it at scale. Here is a way to understand what's happening.

1. Efficiency is no longer optional. It's becoming a grid necessity

In 2025, efficiency was still framed as a cost-savings or ESG measure. In 2026, it becomes a grid-stability tool. Why is the shift? 1) Electricity demand is rising faster than expected (data centers, EVs, manufacturing). 2) Utilities are warning about capacity constraints in multiple regions. 3) New load growth is outpacing substations and transmissionbuildoutss. The result is that efficiency is being treated as the "first fuel"—the fastest way to free up capacity without building new infrastructure.

2. The industry moves from equipment upgrades to system optimization

2025 was dominated by more advanced LED retrofits, HVAC replacements and electrification pilots; However, we believe 2026 will be dominated by advanced controls, continuous commissioning, Fault detection & diagnostics and AI-assisted building automation. The mindset shift we observe is that "We don't just need more equipment. We need smarter operation of what we already have."

3. Electrification pressure forces deeper efficiency

Electrification of Heating, Fleets and Industrial processes is accelerating. But electrification increases peak load, which forces organizations to reduce baseline consumption. Therefore, 2026 becomes the year of heat pump readiness, load shifting, thermal storage and demand flexibility among others. Efficiency becomes the prerequisite for electrification.

4. Data becomes the backbone of energy management

2025 was the year everyone talked about data. 2026 is the year organizations start using it. The key shifts we anticipate submetering becomes standard in large buildings real-time dashboards replace monthly utility bill reviews; AI tools start adjusting setpoints and schedules automatically and portfolio-level benchmarking becomes continuous. This is the biggest structural change in how buildings are run.

5. Efficiency becomes tied to resilience

Extreme weather and grid instability in 2025 pushed resilience to the forefront. In 2026, we expect that all efficiency projects will be bundled with backup power. Microgrids and storage become mainstream; Buildings are designed to "ride through" outages; Critical loads are isolated and optimized. Efficiency is no longer just about saving energy—it's about keeping operations running.

Team Updates

Ven Peruri *Contact Ven at ven@esai.technology*

eSai provided consulting support and system design services to modernize the facility's central plant infrastructure.

Replacement of Existing Chillers

The project scope includes the full removal of two aging water-cooled chillers that have surpassed their useful life and no longer meet current efficiency standards.

These legacy units will be replaced with a high-efficiency industrial heat pump system paired with a modern water-cooled chiller arrangement. This integrated platform delivers both heating and cooling, significantly improving year-round performance through higher COP, optimized part-load operation, and advanced capacity modulation. By leveraging waste heat recovery, the new system dynamically adjusts to real-time load variations and reduces overall energy consumption—supporting the facility's broader sustainability and decarbonization goals.

In addition to improved performance, the industrial-grade equipment enhances reliability, reduces maintenance needs, and provides resilient operation during peak demand periods.

Eliminating Fossil Fuel–Based Domestic Hot Water Production

A key component of the upgrade is the retirement of the facility's fossil fuel–fired steam boiler and associated steam-to-water converter currently used for domestic hot water production. This older configuration is both energy-intensive and a significant source of greenhouse gas emissions.

The heating distribution network will be reconfigured to integrate the heat pump output, including updates to system controls, building automation logic, and overall thermal load alignment. This ensures a smooth and reliable transition from combustion-based heating to a modern, electrically driven platform capable of meeting current and future demand.

Heat pump

Outcome

By removing the facility's outdated and inefficient mechanical equipment—and substantially reducing reliance on the existing low-efficiency boiler. The project is expected to generate annual electricity savings of approximately 1,070,111 kWh and displace an estimated 107,973 Therms of natural gas each year, directly lowering the site's carbon emissions of roughly 30% annually. In parallel, the installation of a high-performance industrial heat pump system introduces a far more efficient, electrically driven thermal platform.

Collectively, these upgrades will enhance overall energy efficiency, strengthen operational resilience, and reduce long-term utility and maintenance costs, while continuing to provide reliable, year-round thermal performance for all building systems.

Soham Joshi *Contact Soham at soham@esai.technology*

Soham reviewed 22 projects, including a post-inspection for 1 project and participated in a scoping call for upcoming projects under BGE's Building Tune-up and Custom incentive programs. These projects propose total annual electrical savings of 4,150 MWh (approximately). The projects included the following types of Energy Conservation Measures (ECMs):

ECMs - Optimization of Setpoints for:	No. of Projects

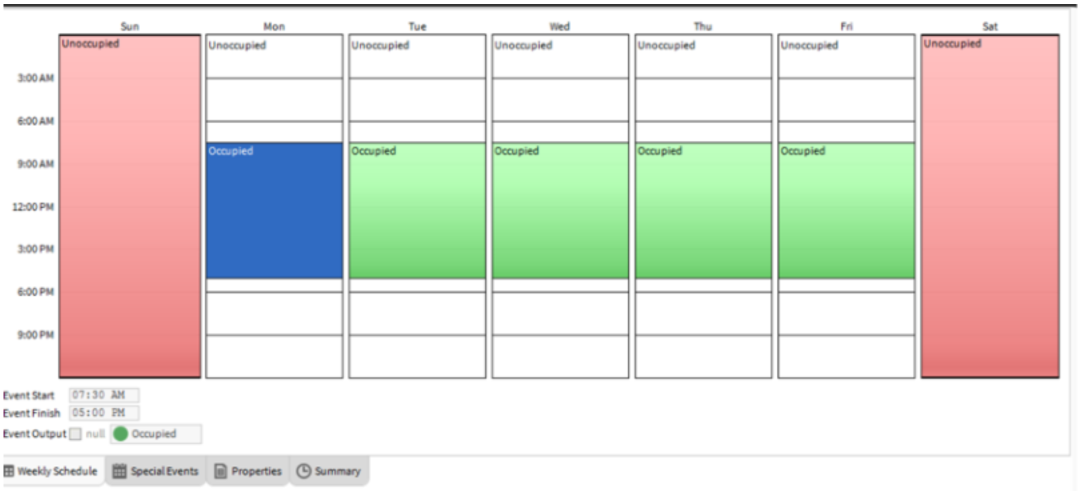
HVAC operation schedules and cooling/heating temperatures for unoccupied hours of operation	19
Tune-ups of VAVs and indoor/outdoor coils of HVAC units	10
Position of outdoor air dampers during economizer operation	6
Duct static pressure for supply air fans	4
Outdoor and indoor air flow	3
Control loops for cooling & heating systems	3
Chilled water temperature reset schedules	2
Indoor CO_2 levels/Demand Control Ventilation (DCV)	2
Differential pressure for hot water/chilled water pump loops	2

The facilities where these projects have been proposed have the following use cases:

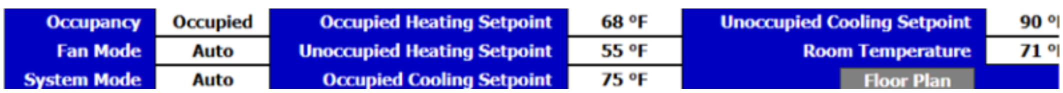
Facility Use Case	No. of Projects
Office	9
Mixed-Use	5
Distribution Center	2
Community Center	1
Multi-Family Living	1
Hospitality	1
Church	1
Pre-School	1
Laboratory	1

Those facilities are located in the following regions in Maryland: Anne Arundel County, Baltimore City, Baltimore County, Harford County, Howard County. Majority (19) of the reviewed projects included HVAC operation schedules and temperature setpoints for unoccupied hours:

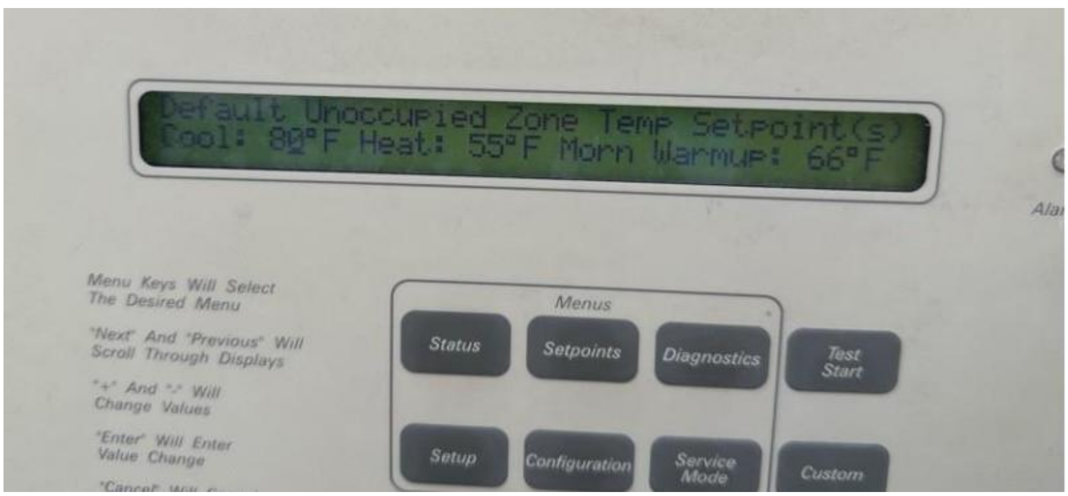
- Many facilities have their Building Automation Systems (BAS) and thermostats configured with schedules that command the HVAC systems to operate as if the facilities are occupied for 24 hours per day throughout the week or as if they are occupied for more than 12 hours per day.
- This measure aims to reduce equipment run-times via modified schedules and temperature setpoints (lower for heating and higher for cooling) during periods when the facilities are unoccupied.
- The electrical savings calculations were based on bin hour calculations & equations in spreadsheets and outputs from energy models developed in software like eQUEST, Carrier HAP 6, Trane Trace 3D Plus.



1. Optimized HVAC operation schedules

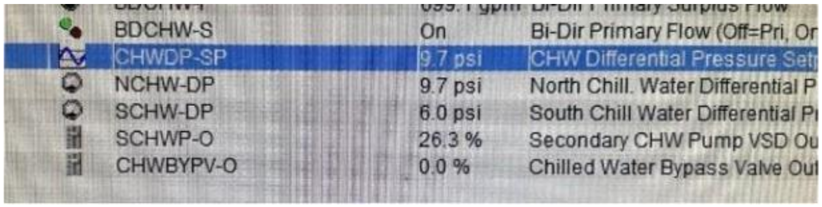


Occupancy	Occupied	Occupied Heating Setpoint	68 °F	Unoccupied Cooling Setpoint	90 °|
Fan Mode	Auto	Unoccupied Heating Setpoint	55 °F	Room Temperature	71 °|
System Mode	Auto	Occupied Cooling Setpoint	75 °F	Floor Plan	

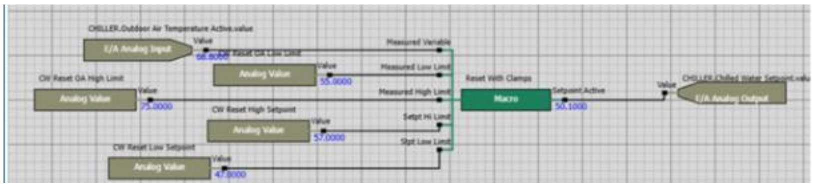


2. Optimized cooling and heating temperature setpoints for unoccupied hours of operation.

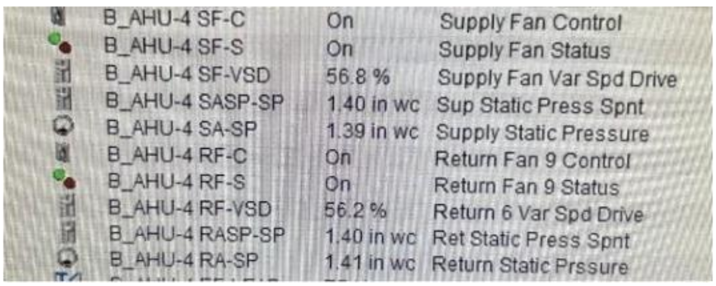

3. Tune-up (cleaning) of an HVAC unit's coils

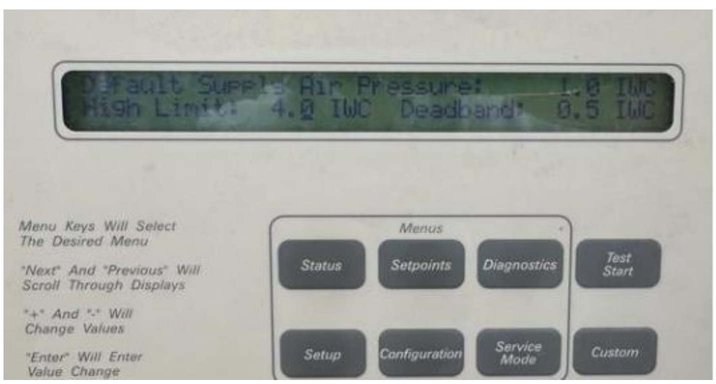


4. Setpoints of differential pressure for a chilled water pump loop

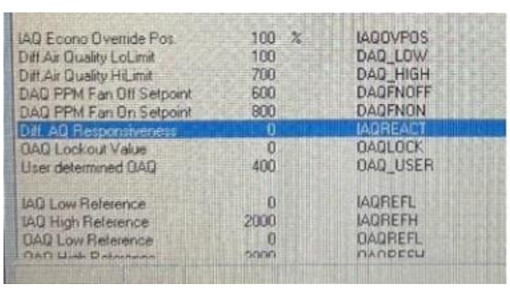


5. Setpoints for chilled water temperature reset schedule

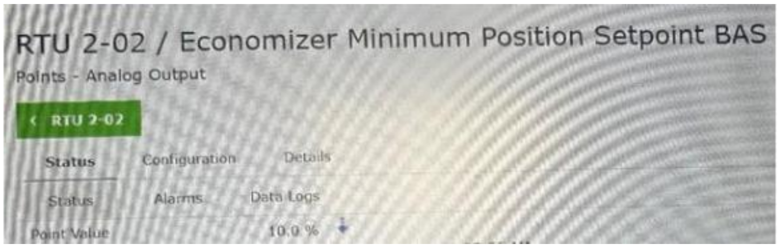




6. Setpoints of duct static pressure for a supply air fan



7. Indoor Air Quality setpoints for CO_2 levels requiring ventilation



8. Setpoint for position of outdoor air dampers during economizer operation

Kirtivardhan Singh *Contact Kirtivardhan at kirti@esai.technology*

In just over two months with us, eSai Engineer **Kirtivardhan Singh has stepped confidently into independent project leadership**, taking on a diverse portfolio of over **15 active projects** across custom energy modeling, building tune-ups, and performance tune-ups, directly supporting eSai's mission of advancing **Resilience, Reliability, and Reduction of GHG emissions** for our clients.

Kirtivardhan's custom modeling projects span the full lifecycle of building simulation; from **sketching building geometry from the ground up** to designing envelopes, climate profiles, HVAC systems, and central plants using industry-standard tools such as **TRACE 3D Plus, HAP, and eQUEST**.

Each model is benchmarked against the appropriate **ASHRAE standards**, ensuring accuracy, compliance, and defensible savings calculations.

On the **building and performance tune-up** side, Kirtivardhan is responsible for:

- Reviewing and validating preliminary building assessment reports
- Correcting and recalculating energy and cost-saving estimates
- Conducting pre- and post-inspections to verify implementation of **Energy Conservation Measures (ECMs)**

These projects range from modest savings of **9,000 kWh** to major improvements exceeding **162,000 kWh**, with an **aggregate saving of more than 700,000 kWh**; a meaningful contribution to our clients' decarbonization pathways.

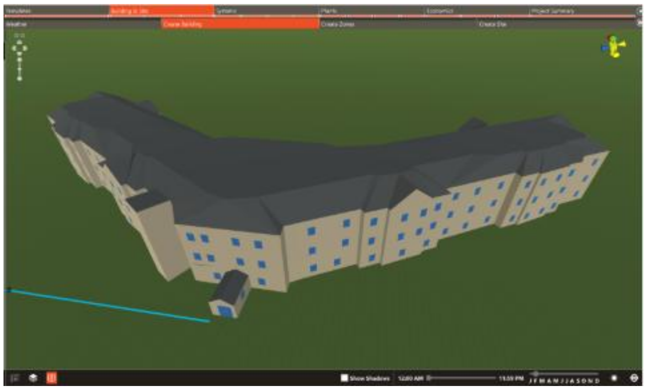
Beyond his project workload, Kirtivardhan has demonstrated a strong commitment to professional development. Between **December 2025 and January 2026**, he completed two advanced ASHRAE-aligned courses:

- **Performance-Based Compliance with ASHRAE Standard 90.1**
- **Integrating Performance-Based Compliance into the Design Process**

These trainings strengthen his ability to integrate simulation-aided design into real-world engineering workflows; an essential skillset for delivering high-performance, code-compliant buildings.

He also attended the **Better Buildings, Better Plants** webinar, **"From the Ground Up: Geothermal Heating and Cooling Solutions,"** expanding his understanding of geothermal applications and their role in next-generation clean-energy systems.

We look forward to seeing his continued growth and impact in the months ahead.



Hannah Aiken *Contact Hannah at hannah@esai.technology*

Something about cold weather makes people think about their thermostats, and Hannah has been looking at a lot of thermostats lately. One of the many energy efficiency incentive programs in Dominion Energy's portfolio focuses on thermostats for hotels. On average, a hotel has 115 rooms each with their own climate control. Hotels can save thousands of kWh a month by switching to a thermostat with programmable setpoints and occupancy sensors. Guests stay comfortable, hotels reduce their energy costs, and demand is reduced for the utility—a win for everyone! Oh, and let's not forget about the incentive check!

Tatyana Shine North ***Contact Tatyana at Tatyana@eSai.technology***

In January, Tatyana collaborated with our Federal Government and local Universities, Towson, Johns Hopkins and Bowie State University to ensure their huge chiller upgrades and new construction projects received consulting for accurate energy modeling and savings per the ASHRAE 90.1-2019 standards. Some of these projects involved onsite generation including geothermal and interconnection with utilities and local utility distribution network. The work will continue until the projects are fully implemented.

Allison Sacamano *Contact Allison at allison@esai.technology*

The start of the year has kept Allison busy with inspections and customer outreach. She inspected projects from each of Dominion three markets served: Healthcare, Hospitality, and Custom & Industrial. These projects included parking lot lights, hotel thermostats and PTHPs, and LED lights for a senior living facility. Outside of technical inspections, Allison has provided site visits with potential hotel customers to perform facility walkthroughs and make recommendations. Allison is hopeful for a productive year for the Dominion program with the rate of interest in these early months. If you are interested in a walk-through, feel free to reach out via the email above.

Mark your calendars!

New topics quarterly through the rest of 2026.

3/10	Drives, Motors, and Fans (OH MY!)	Registration
6/9	Geothermal Heat Pumps	Registration
9/8	Refrigeration Controls as Energy Efficiency	Registration
12/8	Heat Pumps and VRFs	Registration

Series Focus: Hospitality and Healthcare Facilities

eSai LLC